TWO SIGMA SECURITIES
MEMBER OF FINRA

April 23, 2013

Via Electronic Submission

Ms. Elizabeth M. Murphy
Secretary
Securities and Exchange Commission
100 F Street, N.E.
Washington, DC 20549–1090

Re: Decimalization Roundtable (File No. 4-657)

Dear Ms. Murphy:

Two Sigma Securities, LLC ("TSS") appreciates the opportunity to offer the Securities and Exchange Commission ("Commission") its views on effective ways to structure a pilot program to widen the minimum quoting variation for shares of small and mid-sized companies.[1]

Regulatory changes including decimalization and Regulation NMS have catalyzed advances in trading technology, strengthened competition and created substantial economic benefits to equity market participants, particularly retail and institutional investors. Spreads have generally narrowed and frictional costs have declined, especially in large capitalization securities. We do, however, share the concern of Congress and the Commission that the current market structure may be suboptimal for trading in shares of smaller companies.[2] As a result, we support a focused pilot program that scientifically evaluates the impact of widening the minimum quote variations for small and middle capitalization stocks.

TSS believes that a data-driven methodology is required in order to achieve the Commission's goals of creating a market structure that is better suited to small and middle market companies, while maintaining a fair and level playing field without bias towards specific parties. We undertook some statistical analysis to illustrate the different liquidity profiles of large, medium, and small capitalization securities. Generally speaking, our data suggest that smaller company stocks exhibit considerably less liquidity than larger ones, and that trading in small company stocks is more sensitive to changes in tick sizes. Accordingly, we urge the

[1] Established in 2009, TSS is a market maker in over 7,000 securities and a member of the Financial Industry Regulatory Authority, Inc. and 11 U.S. exchanges. While TSS is affiliated with Two Sigma Investments, LLC and Two Sigma Advisers, LLC (each a registered investment adviser with the Commission), the views expressed herein represent only the opinions of TSS and not necessarily the views of any of TSS's affiliates.

[2] *See* Jumpstart our Business Startups Act §106(b); 15 U.S.C. §78k-1(c)(6) (2012); Concept Release on Equity Market Structure, Exch. Act Release No. 61358, 75 Fed. Reg. 3594, 3604 (Jan. 21, 2010) ("The Commission recognizes that small company stocks may trade differently than large company stocks and requests comment specifically on how the market structure performs for small companies and whether it supports the capital raising function for them.").

Commission to focus on smaller company stocks, instead of broadening the experiment to more widely traded securities, and to implement a pilot based on the following principles:

I. ***Focus on the Right Issue***—TSS believes that the Commission should employ a data-driven approach, and determine the scope and course of the pilot program based only on whether there are measurable benefits to liquidity, efficiency, competition and capital formation. Based partly on the data below, TSS believes that the goal of improving small cap liquidity could be undermined by a pilot program that is implemented too broadly. In particular, we would caution against narrowing tick sizes or making other changes for large cap stocks as that could significantly alter the market structure and undermine the experiment in small caps. Market participants should not be burdened by having them accommodate structural changes in actively traded securities which could unduly complicate the analysis of the experiment in small caps.

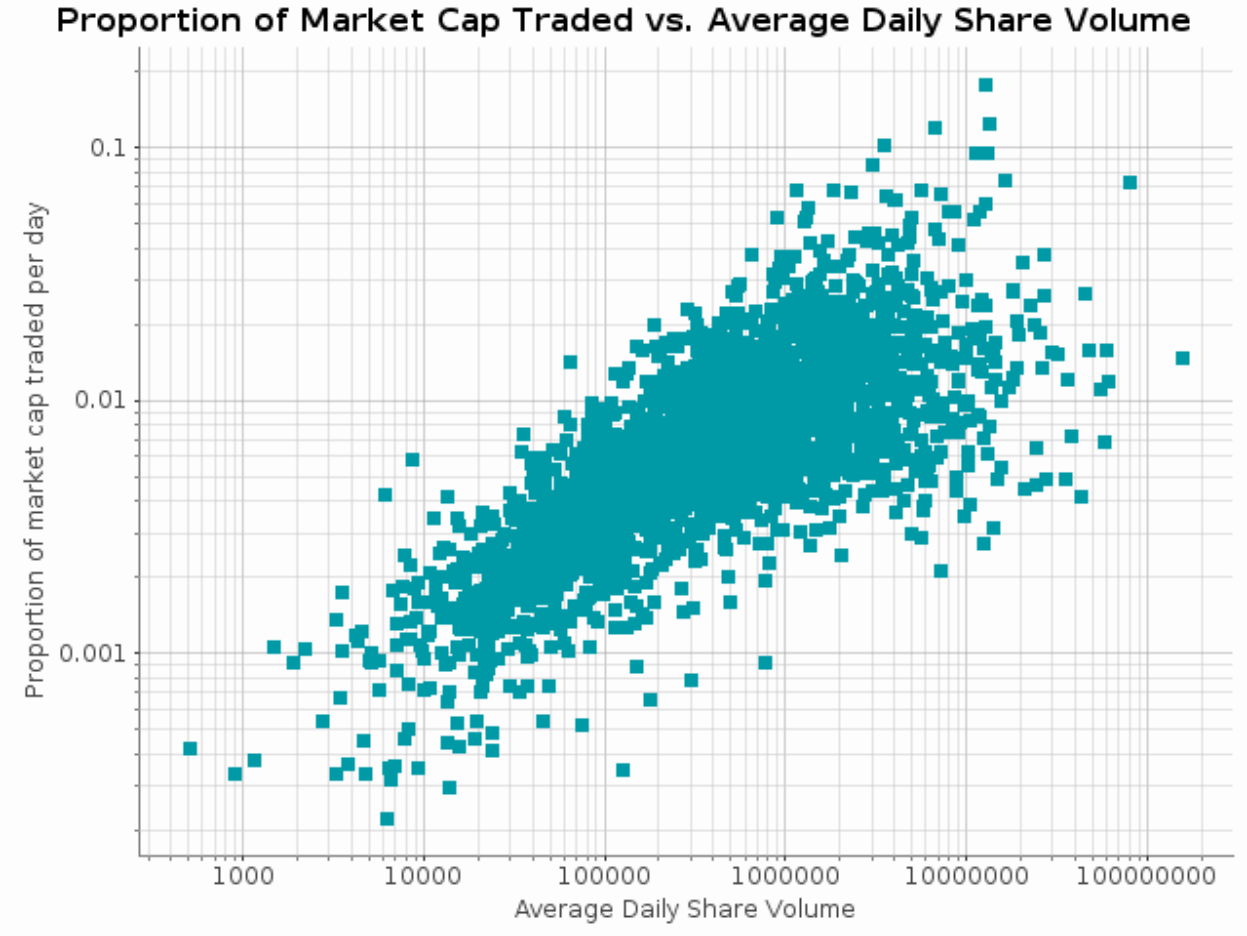
II. ***Do No Harm***—TSS is concerned that widening tick sizes could increase trading costs for retail and institutional investors. Our models generally show that smaller tick sizes contribute to lower trading costs when liquidity is held constant. If, however, liquidity increases when the tick size is widened, trading costs could decline or remain steady. We therefore consider it essential to restrict the pilot to securities where the data show a strong potential for liquidity to increase when minimum quoting increments are widened. We would also advise against changing the trading increment unless there is convincing quantitative evidence that such a change would increase liquidity. Permitting executions at prices between the minimum quoting increments is vital to ensure that retail and institutional investors can continue to receive price improvement on their orders.

III. ***Design Pilot for Scientific Rigor***—A pilot program should be designed in a manner that avoids biases in the stock selection methodology for both the experimental and control groups. This argues against involving issuers in the selection process, for example. We would also suggest that, in the experimental group, the methodology used for determining the "optimal" quote increment be objective and data-driven, rather than arbitrary.

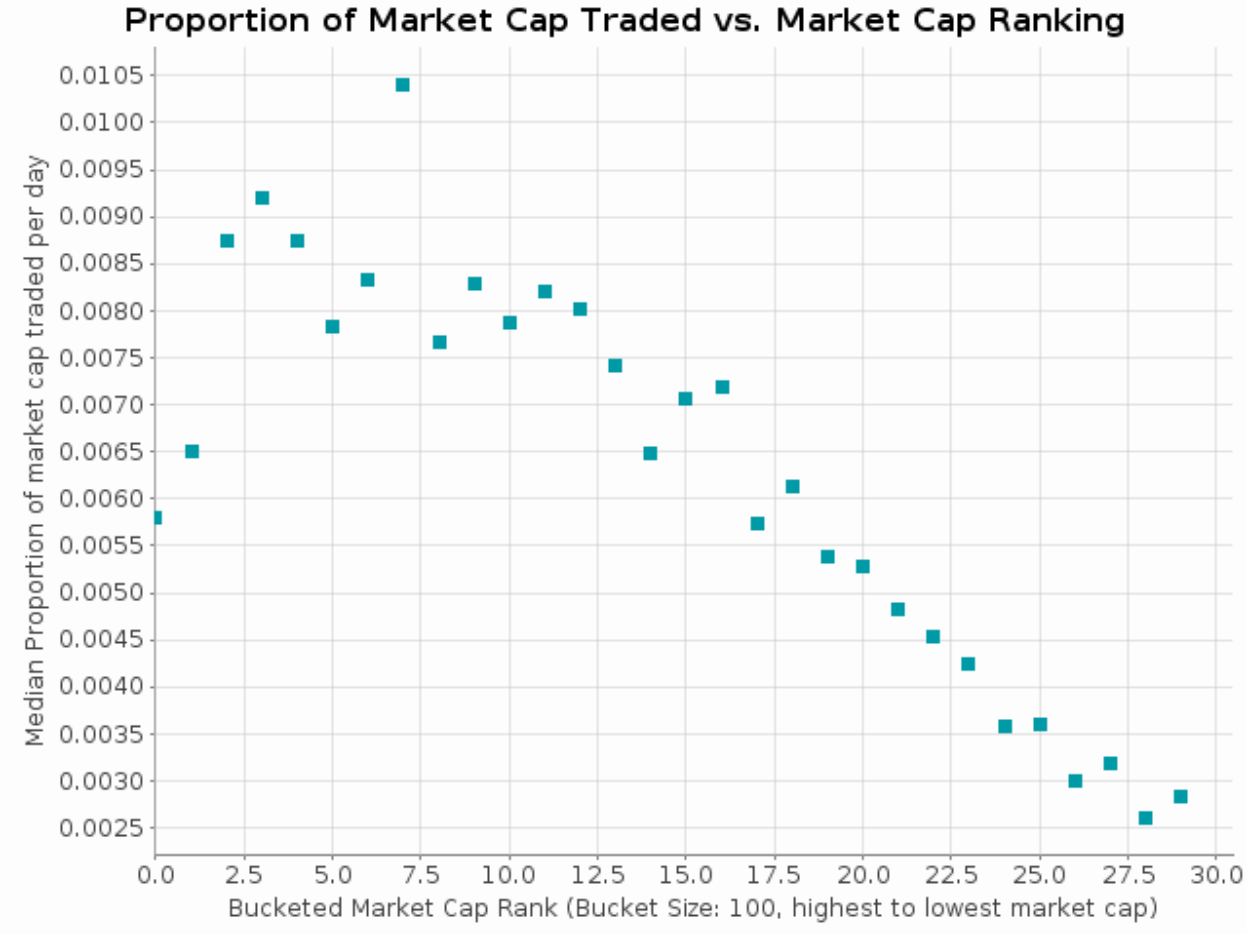
With these key principles in mind, TSS analyzed daily turnover data within our proprietary tradable universe, which roughly corresponds to the most active 3,000 stocks (excluding ETFs) in the U.S. National Market System. More specifically, we measured the percentage of market cap traded based on the actual daily volume of each security, and compared that against each security's market capitalization and average spread. While we might expect that daily turnover would be approximately the same for companies of all sizes, our data shows that the percentage of market cap traded is not constant, but rather rises as company size

increases. Although inconclusive on its own, the data is consistent with the notion that a generalized market bias hinders small cap trading.

The following chart is a scatter plot of the average daily turnover as a proportion of shares outstanding, against the average daily share volume for the period January 1, 2013, to February 2, 2013. The sloping distribution suggests that as share volumes rise, the percentage of market cap traded increases as well. Put differently, the market is relatively less conducive to trading in less liquid securities.



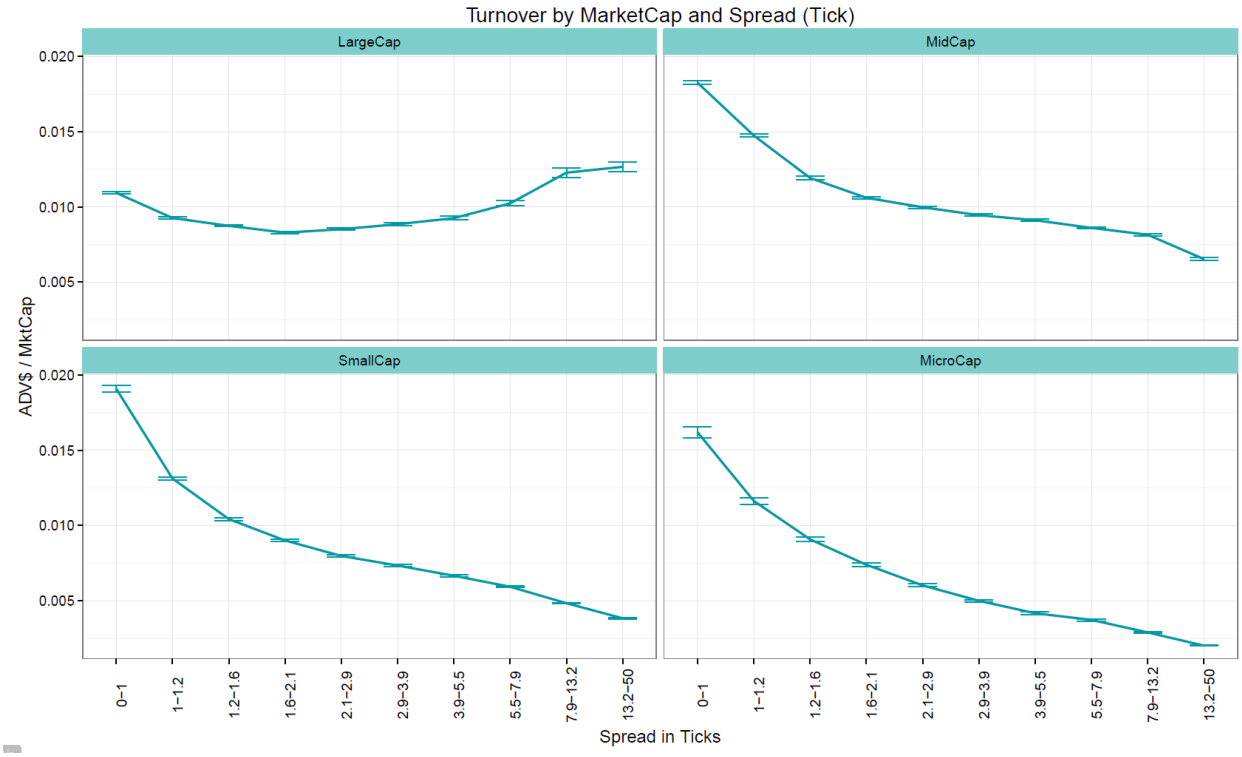
To clarify whether this effect relates directly to market cap, we ranked stocks by market cap from largest to smallest (*i.e.*, the largest was ranked No. 1) and then organized them into groups of 100 securities. The following chart depicts the relationship between market cap rank and the percentage of market cap traded. The consistent degradation of the percentage of market cap traded as capitalization decreases indicates that there is less liquidity for smaller stocks than larger ones.



Finally, we analyzed the relationship between average spreads (measured in ticks) and the percentage of market cap traded. To simplify the analysis, we divided companies into four groups: "LargeCap", meaning companies with a market capitalization greater than or equal to $5 billion; "MidCap", meaning companies with a market capitalization less than $5 billion, but greater than or equal to $1 billion; "SmallCap", meaning companies with a market capitalization of less than $1 billion, but greater than or equal to $250 million; and "MicroCap," meaning companies with a market capitalization of less than $250 million. In brief, the SmallCap and MicroCap groups roughly correspond to the capitalization profile of the Russell 2000 Index, while the LargeCap and MidCap groups generally encompass the size of companies included in the Russell 1000 Index.[3]

The graphs below generally illustrate the varying relationship between average spread, measured in ticks, and market cap traded across the four capitalization groups. For the LargeCap group, the percentage of market cap traded is relatively steady as average spreads widen. By contrast, for the SmallCap and MicroCap group, the percentage of market cap traded drops sharply as the spread in number of ticks increases.

[3] As of March 26, 2013, the market capitalization for companies in the Russell 2000 Index ranged from $5.7 billion to $23.2 million, with a median value of approximately $583.8 million, according to Bloomberg data. For the Russell 1000 Index, the market capitalization ranged from $433 billion to $311.5 million, with a median value of approximately $6.7 billion, Bloomberg data show.



To summarize, we have described three different methods of measuring the percentage of market capitalization traded and the limited liquidity provided in small capitalization securities. These methods both offer potential tests for the Commission to implement in the pilot program and support the theory that enhancing incentives for market participants to post orders in small caps may help increase liquidity. Widening the minimum quoting increment in less liquid names will make it relatively more expensive for traders to jump in front of existing bids or offers and might well incentivize posting more liquidity. By contrast, the LargeCap chart above suggests that trading in large capitalization securities is unlikely to increase with wider minimum quoting increments.

We therefore recommend that the Commission focus exclusively on smaller capitalization stocks, specifically the Russell 2000 Index, as this index is well understood by the market and comprised of securities that have sufficient volume to be statistically significant. Maintaining the pilot for at least a year would permit an evaluation of results across different market conditions. We urge the Commission to keep the design of the pilot simple. Simplicity will ensure timely implementation and reduce operational risks as most firms will have to conduct an extensive review of their trading software to comply with the pilot. After 12 years of decimal pricing, many programs are likely to assume implicitly that all stocks are quoted in minimum increments of a penny—that code will have to be identified and updated. The reprogramming effort would be of limited utility unless the pilot is designed to produce reliable data. To this end, the Commission should also avoid biases in the selection of stocks for the experimental group by not allowing issuers to opt into or out of the pilot. This type of

experimental design should yield results that can be interpreted in a scientifically valid and unambiguous manner.

In a similar vein, we would recommend setting the minimum quoting increment in a conservative manner, as we remain concerned about increased transaction costs for retail and institutional investors. As a further protection against increased costs, the Commission should continue to permit executions at prices between the minimum quoting increments. Banning such executions would not only add to the complexity of evaluating the pilot's results, but would effectively deprive retail and institutional investors of an opportunity to receive price improvement. We believe that a pilot following these recommendations would improve the chances of increasing liquidity in small caps, reduce the risk of harmful consequences, and yield suitable data for rigorous, uncontroverted analysis.

We would welcome the opportunity to discuss this letter and engage in further dialogue with the Commission on these topics. Please feel free to contact me at 646-292-6425 with any questions.

Respectfully submitted,

David Weisberger
Executive Principal
Two Sigma Securities, LLC

cc: The Hon. Mary Jo White, Chairman
The Hon. Elisse B. Walter, Commissioner
The Hon. Luis A. Aguilar, Commissioner
The Hon. Troy A. Paredes, Commissioner
The Hon. Daniel M. Gallagher, Commissioner
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